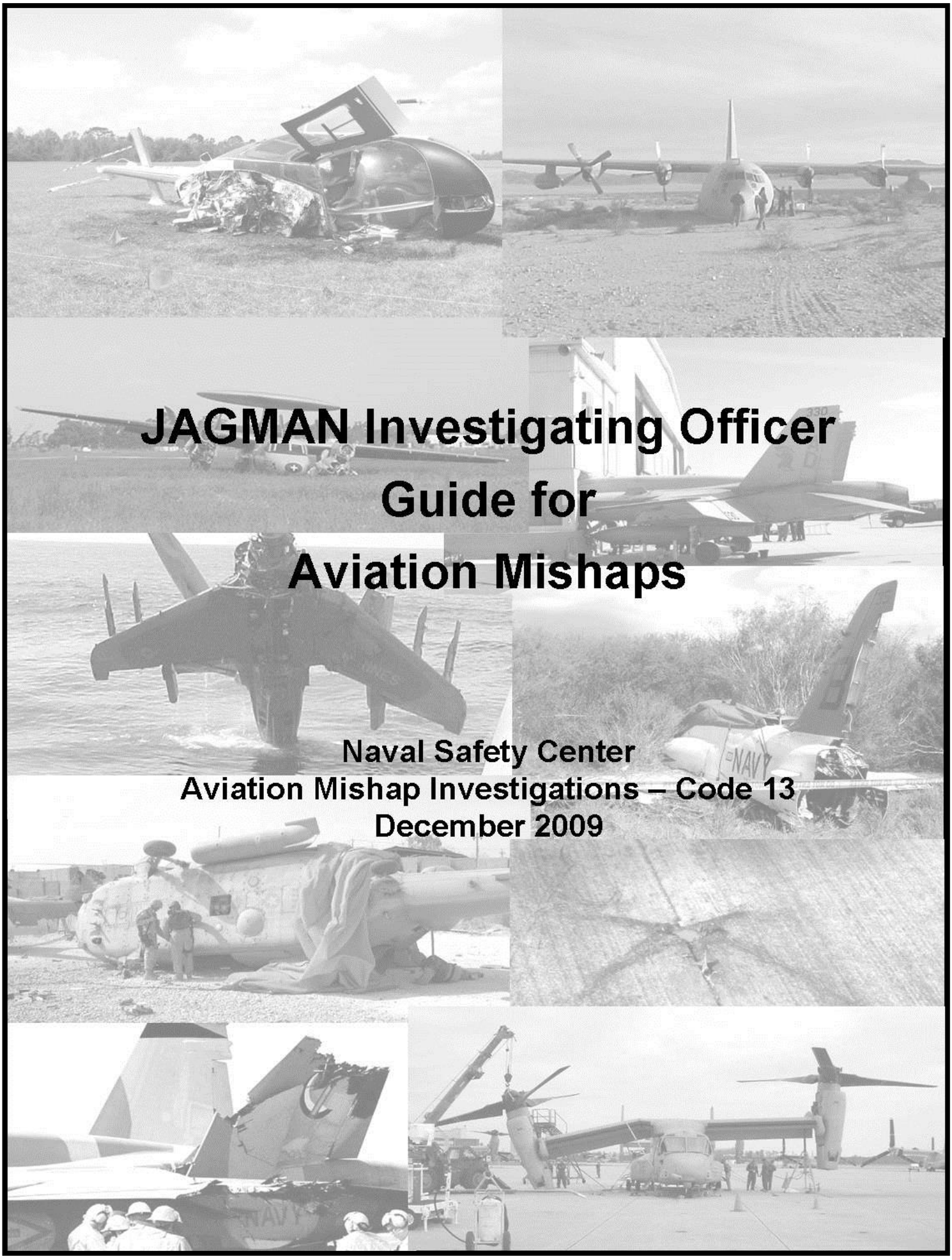

JAGMAN Investigating Officer Guide for Aviation Mishaps

Naval Safety Center
Aviation Mishap Investigations – Code 13
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Contents

I. Introduction

Scope

The purpose of this guide is to aid a prospective JAGMAN Investigating Officer (IO) by discussing activities surrounding a worst-case aviation mishap (strike damage with fatality). It is important to understand that each mishap is unique, often with widely differing circumstances, and thus precludes a one-size-fits-all approach. This is not a checklist or an all inclusive document; but rather a primer which discusses some collateral tasks, topics and problems you as an Investigating Officer may encounter in the process of conducting the JAGMAN investigation. It provides method and traffic directions for those who have not traveled this way before and is intended to complement existing policy and guidance provided by other resources; specifically the Manual of the Judge Advocate General (JAGINST 5800.7E), Chapter II – Administrative Investigations.

This guide was prepared by the Naval Safety Center's Aircraft Mishap Investigation Division. Corrections and recommendations for improvement are invited and may be submitted by e-mail or phone:

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Purpose of a JAGMAN Investigation

A JAG Manual investigation is an administrative fact-finding body constituted under the regulations set forth in Chapter II of the JAG Manual to determine the causes and responsibility for the mishap, nature and extent of any injuries, description of all damage to property, and any attendant circumstances. The JAGMAN investigation is in addition to, and separate from, the aviation mishap safety investigation, which has priority over obtaining and analyzing evidence.

Purpose of an Aviation Mishap Safety Investigation

An aviation mishap safety investigation is conducted in accordance with the Naval Aviation Safety Program (OPNAVINST 3750.6R) to determine why a mishap occurred with an ultimate goal of preventing future mishaps. It is conducted solely for safety purposes and is independent of any other investigation or board.

II. Getting Started

It is likely the IO will not to be assigned until several days after an aircraft mishap occurred. Unlike the aviation mishap safety investigation conducted by trained Aviation Mishap Board (AMB), the JAG investigation is typically a one man show. The IO may have no funding, no investigative experience, no control of the evidence, no knowledge of the aircraft type being investigating, no idea what "Safety Privilege" is, and not a clue what to do first, which is why this guide was developed. In principle, an IO needs only an inquiring mind, a penchant for project management and a handy copy of Chapter II of the JAG Manual.

Contact the AMB

Once designated, one of the first actions you should do is to contact the AMB, preferably the senior member. This is critical to your investigation, as the AMB will have begun its efforts, to include; taking charge of the mishap scene, establishing security, working wreckage salvage or reclamation, gathering real evidence, identifying and interviewing witnesses, etc. The Senior Member of the AMB or the Naval Safety Center Investigator, if assigned, has control over **all** real (physical) evidence until formally released, typically when the investigation is complete. This is the same evidence you will need, but this does not mean you have to wait until the safety investigation is complete for access. Rather, you must coordinate with the AMB for concurrent access. Therefore, it is important to form a working relationship early on with the AMB Senior Member and/or AMB Aviation Safety Officer (ASO) as they are the ones who can support your requirements.

Assess the Situation

1. Obviously, you should immediately start to gather information, not only with regards to the mishap, but also on the status of post mishap actions.

a. Pool information and take notes. Information will quickly exceed memory.

b. Evaluate information. Is it authoritative, first-hand, without speculation?

c. Maintain objective detachment. Some of what initially passes for "known" will be shown later to be inaccurate.

d. Identify the following from available information. Do not linger over missing detail, as at this initial stage information will be incomplete.

> Mishap context (mission, equipment, route, location weather);

> Damage to aircraft and other DoD and non-DoD property; *****

> Survivors and casualties (crew, passengers, ground personnel);

> Agencies responding or on-scene.

***** The AMB will provide an estimate of damage to the aircraft. A claims officer from the nearest military base will provide estimates of damage to non-DoD property. This information should be included in the JAG report along with the names of possible claimants.

2. The elements of information above form only a distant view of *what happened, where it happened* and *to whom. Why, how* and *by whom* describe cause, are harder to resolve, and require more information before you can form authoritative conclusions – hence an investigation.

3. Some investigative actions will keep until you get to them a day or two later such as obtaining documentary and real evidence (records, ATC tapes, preflight fluid samples). It is important to isolate these as a snapshot of conditions before or at the time of the mishap, but the information they contain is not perishable. Review and analyze them when time permits.

4. Conversely, witness information must be obtained as quickly as possible. Memory is perishable. Accounts change as witnesses reflect, talk with others, and read (news, NATOPS, MIMs). Make every effort to get witness information before it is contaminated. However, as with all evidence, you need to coordinate your efforts regarding witnesses with the AMB who has the priority. Sections IV and VI provide more detailed discussion on handling evidence, working with witnesses and coordination with the AMB.

Additional Resources

Another early action item should be to review available references pertinent to conducting the investigation. These include:

Manual of the Judge Advocate General (JAGINST 5800.7E): Provides specific guidance for conducting an administrative investigation. An electronic copy is available through the Judge Advocate General's Corps website:

http://www.jag.navy.mil/library/instructions.htm

Naval Aviation Safety Program (OPNAVINST 3750.6R): Provides detailed information regarding the conduct of an Aviation Safety Investigation, to include AMB duties, concept of privilege, interaction with other investigative bodies, etc. An electronic copy is available at the Naval Safety Center's website:

http://www.safetycenter.navy.mil/aviation

AMB Senior Member's Guide: Provides guidance to AMB's in conducting the safety mishap investigation. It is available at:

http://www.safetycenter.navy.mil/aviation/investigations/membersguide

Naval Flight Surgeon's Pocket Reference to Aircraft Mishap Investigation: Provides useful information in conducting an aviation mishap investigation with a focus on the aeromedical aspects. It is available at:

http://www.safetycenter.navy.mil/aviation/aeromedical/pocketreference.asp

III. On the Scene

Crash Site – First Look

Contact the senior member of the AMB and arrange a visit to the mishap site.

a. Exercise caution and restraint.

b. The site and wreckage will have hazards unfamiliar to you.

c. You are a hazard to evidence.

Your first visit is a reconnaissance. **Withhold hasty judgments.** Understanding takes time, and not all the evidence is at the mishap site. Walk wide around wreckage and ground scars to see the site from every angle. Take in the BIG picture. Then begin to work in closer. **Do not open panels, flip controls or try switches.**

Although the safety investigation has precedence over the JAG investigation, the AMB must not spoil evidence which others will need to view. Sifting through the wreckage will keep until the AMB has a plan to examine it by layers.

Assess the environs, the distribution and condition of wreckage. Determine from the AMB whether the wreckage is safe to begin a closer assessment (fire out, ordnance and pressurized vessels made safe, fuel evacuated, etc.). Typically the wreckage will remain in place until directed by the AMB, usually at least 24 hours after the mishap. However, some circumstances may require the wreckage to be moved sooner. Coordination with the AMB is key.

Near term, the higher concern is to exploit the wreckage <u>in place</u> for information it will yield as it lays, information which can be lost when disturbed. Take pictures before the wreckage is moved. Start with the overall scene and then work down to the micro level to include such items as switch and lever positions. All non-privilege photographs the AMB took will be available to you; however, if there is something of particular interest to you do not hesitate to take the shot. Once wreckage starts to be moved, evidence can be lost. Refer to Section V for additional considerations regarding photos.

Once all the interested parties are satisfied, concern turns to removing the wreckage to accomplish what can not be done at the scene or what is better done under controlled conditions. Salvage and reclamation of the wreckage will be coordinated by the AMB through the reporting custodian (i.e. mishap squadron). You need not stay at the site longer than is required to see the big picture and make initial assessments; you may have tasks elsewhere.

Questions to pose to the AMB Senior Member:

a. To what extent can the wreckage be examined as it sits?

b. What are the local maintenance or engineering capabilities?

c. Where will the wreckage be moved?

d. What support activities will assist? This list may include; NAVAIR Flight Support Teams (FST), NAVAIR Mishap Investigation Support Team (MIST), OEMs, etc.

Do not work a crash site without light. Doing so poses risk to personnel and evidence, with low prospect for reward.

Hazardous Materials

The hazards at a mishap site are varied and not only include those associated with the airframe and aircrew (CADs, composites, radio active compounds, broken glass, ordnance, pressure vessels, biological, etc.), but also environmental hazards (temperature, terrain, dangerous animals, hazardous plants, the sun, etc.). Good information can be found at:

http://www.safetycenter.navy.mil/aviation/investigations/membersguide/littlethings.htm

If you are going to survey the crash site, coordinate with the AMB Senior Member or AMB ASO for a brief on specific hazards to the site and proper personal protective equipment (PPE) required. The PPE may be available at the site, but not always. So you may also need to get your own. At a minimum:

> Dress appropriately for the location and environmental conditions.
> Recommend long sleeve shirt, long pants, good boots, and leather gloves.
> Respirator: at a minimum use a N95 particulate mask.
> Eye protection.

Always wash thoroughly with soap and water after handling any wreckage material.

Site Security

The AMB will coordinate site security. Ensure you coordinate with the AMB to get your name and the names of those who might be assisting you with the JAG investigation on the appropriate access list. **Note:** Military personnel may not exercise police authority off-base. Local city police or county sheriff's auxiliary are responsible for security of a crash site off a federal reservation.

A disaster site is a crowd magnet. Anyone on site who is not part of a solution (crash fire rescue, EOD, investigation, security, working party, etc.) is a hindrance and a risk to their safety and yours. Requests will come from the press, government officials and military personnel. Your purpose is to conduct an investigation; you are not obligated to run tours. Tactfully, but firmly, dissuade visitors regardless of rank and refer members of the press to the designated PAO (have name, phone number at the ready).

Daily Wrap-up

It is a good idea to take a few minutes at the end of each day to catch up on the activities of the AMB and the work accomplished by anyone supporting your efforts. This is also the time to consider what you need to do the next day and ensure appropriate coordination is completed. For example consider:

a. Witness Interviews. For those from whom you have gathered statements, read them before scheduling an interview. It serves no purpose to reserve the time and then find a particular witness has nothing to contribute.

b. Diagram / survey / plot the site and wreckage as appropriate.

c. Review records, tapes, radar data in descending order of their likely potential to provide useful information (varies with mishap context).

Remember – **take a long view with regards to the investigation**. Yes, you have a deadline; however, you are in this for more than a few days. Pace yourself and adjourn each day in time to allow food and rest.

IV. Evidence

What you can't have and what you can

All evidence, with the exception of that considered to be protected by the "safety privilege", can and should be shared with the JAGMAN IO, but **you have to ask for it**. If the evidence is factual in nature, not based on, or derived from a promise of confidentiality, then it is available for the JAGMAN investigation. Conversely, **all** the evidence the JAGMAN IO collects can be shared with the AMB and if you find something that the AMB is unaware of, then you should inform the AMB.

Typically for every mishap, there will be a vast volume of evidence and it is easy to be over-whelmed. Therefore, it is highly recommended that you establish some system of organizing the information as it becomes available. Keep in mind that not everything you review will be needed for the report; but sometimes you don't know exactly what you do need until later. One rather simple option is to establish a log and numbering system. Each piece of evidence is numbered and entered into the log, identifying what it is and noting any significant remarks.

Note: As a general rule all the evidence and your deliberations should be treated as "For Official Use Only" (FOUO) and protected accordingly. If you are using a computer in a temporary workspace, be careful not to leave photographs of the mishap or other mishap-related information on the hard drive. That is how sensitive information and photographs end up posted on the internet.

Concept of Privilege

Much of the information associated with a Safety Investigation is "privileged". This information includes: witness statements given under a promise of confidentiality; all AMB deliberations and analysis (to include written and verbal comments); any information which would not have been discovered but for information provided under a promise of confidentiality; and associated endorsements. Privileged safety information is not releasable under the Freedom of Information Act and shall be used ONLY for safety purposes.

The promise of confidentiality offered by privilege is to: 1) overcome any reluctance of an individual to reveal complete and candid information about the circumstances surrounding a mishap, and 2) encourage AMBs and endorsers of aviation SIRs to provide complete, open and forthright information, opinions and recommendations regarding a mishap.

Should privileged information be used for any purpose other than safety, credibility of future assurances would be lost. Therefore, we must keep faith with the assurances of the limited use of this information. The following statement is included in each SIR and subsequent endorsement and captures the seriousness of violating this protection.

Examples of Privileged and Non-Privileged Evidence:

Witness Statements / Interviews (Privileged): All statements and interviews conducted as part of the safety investigation will not be available to you. However; the AMB can provide a list of individuals they interviewed or who provided statements. When you contact each witness, you are required by JAGINST 5800.7E to explain the reason for an apparent duplication of effort and ensure they understand that you are not affiliated with the safety investigation.

Photography (Privileged and Non-Privileged): The AMB most likely possesses thorough photographic coverage of a relatively undisturbed mishap site by the time you arrive. There is often some confusion over whether such evidence is privileged or not. To help differentiate, listed below are examples of privileged and non-privileged photograph

Non-Privileged
Wreckage
Wreckage with a ruler for scale
Pointing at a broken part
Pointing at a gauge
Board Member holding wreckage
Human Remains

Privileged
Board member sitting in cockpit recreating a scenario
Board member holding a broken part with a sign saying “Causal Factor”

Source Documents (Non-Privileged): Aircraft log books, pilot training jackets, flight schedules, etc., will be provided to you for review and copying if desired. This is best done early, while the AMB is involved with wreckage recovery. All documents shall be returned to the AMB's custody after information is extracted.

Engineering Investigation (EI) Reports (Non-Privileged): EI reports are factual documents produced to support an investigation. Typically they are requested by the AMB, but you may request an EI as well, if there is something you believe requires the detailed engineering review.

Flight Data Recorders (FDR), Aircraft Non-Volatile Memory (NVM) Data Sources and Air Traffic Control (ATC) Recordings (Non-Privileged): Data recorders from the mishap aircraft will likely be sent to the component manufacturer

or NAVAIR Flight Support Team (FST) to be downloaded. All information obtained from data recorders, in its raw, undisturbed state is real evidence that can be shared with the JAG investigator. Examples of such data include: radar air traffic control center raw radar plots and associated audio tracks, control tower radio communications tapes, HUD tapes, PLAT tapes, FLIR and radar video tape recorder (VTR) tapes, and data from mission computers and flight data recorders.

Mishap Flight Animation (Privileged, with an exception): Once the AMB has the raw data enhanced, manipulated or animated for analysis, correlated and interlaced with other data, or interpreted in any way, the products of these efforts are privileged. *However,* the raw data still exists, and the JAG investigator can request from the same engineers a separate enhancement, manipulation and animation of any or all data for an independent product free of AMB influence. That product is *Non-Privileged.*

V. Crash Site and Wreckage as Evidence

Retrieval or salvage of aircraft wreckage from the mishap site is the job of the AMB and the JAG investigator should not participate.

1. Photograph extensively. Electronic memory is cheap. (see Photography)
2. The AMB should obtain fluid samples (fuel, oil, hydraulic) early for analysis.
3. Make or obtain wreckage diagrams. (see Wreckage Diagram)

Mishap Site Examination

1. Examination of the damage to the aircraft, surrounding environment and distribution of the wreckage at the crash site may reveal:

   a. Angle of incidence
   b. Speed
   c. Attitude
   d. In-flight fire versus ground fire
   e. In-flight structural failure
   f. Aircraft configuration and integrity at impact
   g. Engine operation
   h. Whether ejection occurred

2. The following may be evident from field examination or might require component shipment elsewhere for engineering investigation:

   a. Position of flight controls and engine controls at impact
   b. Instrument readings
   c. Presence and type of contamination
   d. Ejection attempted, sequence interruption and cause
   e. Component operating at impact
   f. Electrical sources of fire ignition
   g. Type/source of combustible material
   h. Temperature profile of heat-distressed items
   i. Light bulb illumination at impact
   j. Trim settings
   k. Engine condition, or malfunction
   l. Thrust (demanded versus actual)

m. Propeller pitch

Wreckage Diagram

The mishap site will change, wreckage will be moved. A diagram preserves data for analysis. **Coordinate with the AMB.** They will most likely engage professional services, (Public Works, Civil Engineers), for a site survey. Request a raw copy from the surveyor, free of AMB input of speculation or deduction.

If you decide to do your own diagram, then consider the following:

1. Use appropriate technology for the scale of the task. If distances are short, use a tape measure. If distances are great, use GPS.

2. Use a method suited to the site and distribution of wreckage.
   a. **Polar:** suited for concentric wreckage distribution around an impact point. Use a compass and tape measure (or walking wheel) to measure direction and distances from main impact point. Use polar graph paper if possible.
   b. **Linear:** suited to wreckage distribution with a prominent long axis (typically flight path vector).
   c. **Grid:** suited for widely scattered wreckage (multiple ground impacts, midair collision, in-flight breakup). Establish a centerline line (cardinal compass points or flight path vector) and a baseline perpendicular to this line. Trace out from the flight path line, parallel to the baseline, at 25 to 50 foot intervals.

3. Consider the entries below:
   a. Magnetic north.
   b. Impact points (ground and vertical obstructions).
   c. Flight path, wreckage vector.
   d. Scale and elevation.
   e. Significant aircraft parts.
   f. Crew locations.
   g. Ground fire limit.
   h. Ground markings.
   i. Witness location.
   j. Wind velocity, direction at mishap.
   k. Direction of the sun/moon at mishap.
   l. Direction to nearest airport, NAVAID, town, landmark.

4. Aids to site diagramming:

a. Aerial photography

b. Sketch terrain cross section (for site with vertical development).

Photography

The easy method:

1. Obtain Non-Privileged copies from the AMB

2. Download original images to a master, *"read only"* CD. This helps to ensure picture files are original and not manipulated.

Or you can take your own photographs. If you decide to do this, then consider the following:

1. Use a Combat Cameraman if readily available.

2. Use a good Digital Camera. Take note of the make and model to include in the final report.

3. How to Shoot

   a. Number and identify pictures in a log as they are taken

   b. Overshoot and under-print

   c. Use color film or imaging

   d. Use force flash in all lighting conditions

   e. Consider a small white-board (notepad, index card) to write captions and place in the foreground of pictures (right, #1 engine, north...)

   f. A military photo lab provides secure film development. If you go commercial, find one which develops on-site with short turn-around; wait and observe proceedings to ensure all copies are delivered to you.

   g. Although hundreds of photos may be taken, your report should include only those needed to illuminate the evidence for a reader.

4. Scene Coverage (Ground)

   a. Show enough background for orientation. A sweeping sequence provides panoramic orientation. A wide shot, medium shot, and close-up may encompass the scene, if you have look-down. Otherwise, shoot from four compass points.

   b. Bodies, ALSS (multiple views) in position before moving (sensitive, but not privileged). Photograph close-up and in relation to wreckage or mishap scene. Be sure the numbered tag is showing.

   c. Views of major wreckage and parts

   d. Detail views of selected components: instruments, switches, breakers, controls; control surfaces, actuators; engine (inlet, discharge; accessories,

connections); soot pattern, deformation, rupture; any equipment with curious damage.

e. Ground scars, obstacle strikes before ground impact

f. View from the vantage of each eye-witness

5. Aerial Coverage (helo preferred)

   a. Crash site and surrounding area (can aid locating, diagramming wreckage)

   b. Views from flight path into crash site. Serial stills or video. Same time of day (sun angle) as mishap

6. Survivor Coverage

   a. Views of flight equipment; close-up of any damage

   b. Views of injuries out of equipment; close-ups, if helpful

   c. Views of survivor reenacting mishap

7. Special Photography **--** Ultraviolet and Infrared

   a. Special lighting (UV) and color filters (#12 yellow) might reveal features not visible to the eye

   b. Infrared photography has been used for:
   - Wreckage in heavy foliage or shallow water
   - Identification of ground scars and tree strikes
   - Fuel or oil spill patterns

8. Special Photography

   a. Photo Micrographs -- Ultra close-up, high magnification, typical in scientific examinations

Fatalities

1. The Office of the Armed Forces Medical Examiner (OAFME) at the Armed Forces Institute of Pathology (AFIP) will conduct the autopsies on military aircraft mishap fatalities. The AMB should notify AFIP and request autopsy.

Armed Forces Institute of Pathology (AFIP)

Comm (800) 744-8427 or (301) 319-0000, DSN 285-0000

2. You need copies of the autopsies and death certificates, both of which are non-privilege documents.

3. You will not have access to the AMB analysis of the autopsy which is included in the Aeromedical Analysis done by the Flight Surgeon attached to the AMB as this is a privilege document. However, if there appears to be a need for extensive Human

Factor or Medical analysis, you may want to engage your own Flight Surgeon to support your investigation.

Fire Investigation

1. Clues to the origin, progress and cause of a fire can be gleaned from patient examination of the wreckage. The task is made difficult by destruction of some parts as a result of the fire. Key questions are:

   a. Was there an in-flight fire?

   b. Was there a ground or post-impact fire?

   c. Where did the fire start?

   d. What ignition and fuel were available at the location?

2. To start a fire, three conditions must exist: combustible material, oxidizer, and ignition. To sustain the fire, ignition must be continuous or there must be enough heat to constitute a continuous ignition.

3. Flammable liquids (fuel, oil, hydraulic fluid) burn as vapor. A mist (e.g., pressurized fluid escaping from a small orifice) behaves as a vapor, so it is possible to have fire conditions at temperatures lower than a liquid's flash (vapor) point.

4. Sources of ignition can include:

   a. Hot surfaces (engine components, overheated equipment, bleed air duct, auxiliary power units, in-flight galley, etc.)

   b. Electrical arc (short, static discharge, lightning)

   c. Friction spark

5. Note the wreckage distribution for missing parts. Parts may have been burned off and may be lying along the flight path. If so, these would give evidence of fire in-flight.

6. Note the state of fire extinguisher bottles and condition of fire detectors.

7. Note metal fractures that have been subjected to heat. Parts that fail at elevated temperatures leave clues that a structural engineer or metallurgist will recognize.

8. Note the status of self-locking nuts held by nylon that may have melted away.

9. Safety wire should remain following a normal ground fire.

10. If an in-flight fire is contained within the aircraft, it may be indistinguishable from a post-impact fire. A fire which burns through the structure/skin gains exposure to the slipstream. This creates two effects:

    a. It can increase the intensity of the fire. In-flight fires can burn in excess of 3000ºF due to ram air replacing oxygen depleted in combustion. If the materials

of melted components have a melting point above typical temperatures of a ground fire, 1600ºF to 2000ºF, then an in-flight fire should be suspected.

b. It will develop a fire pattern which flows with the slipstream.
   - Molten metal from an in-flight fire will be splattered by the slipstream and found downwind to the fire source; metal liquefied by ground fire will drip with gravity and puddle.
   - An in-flight fire's soot pattern follows the airflow, which is usually the slipstream. The soot pattern of a ground fire usually flows upward and in the direction of the surface wind. (Soot does not adhere to surfaces hotter than 700ºF.)

11. More on soot or char:

    a. Soot on fractured or torn edges indicates deposit after fracture.

    b. Scratches, scuffs and smears in soot and charred paint indicate damage after soot deposit or heat damage.

    c. Shadowing effect reveals airflow direction. Soot traveling with airflow deposits on the upstream side and flanks of an object; the lee side will be clean. This applies all the way down to items as small as rivet heads.

12. Wreckage buried at impact (crater content) should not be exposed to post-impact fire; evidence of fire damage would indicate in-flight fire.

13. Sometimes, the extent of aircraft destruction or the wide scatter at the site complicates appreciation of a soot pattern in the field. This is compounded when there has been a subsequent ground fire. Wreckage layout (2- or 3-dimensional) is helpful to evaluate signs of fire.

VI. Witness Statements and Interviews

JAGMAN vs. Safety Investigation

Witness statements gathered in the course of the JAGMAN investigation are critical. Usually, the witnesses will have been interviewed by the AMB already. The JAGMAN Investigating Officer does not have access to any written statement or interview acquired by the AMB. He may however, obtain from the AMB a list of their witnesses and obtain separate statements and/or interviews as necessary.

If the possibility exists that witnesses will provide a statement or grant an interview to both investigative bodies, you must explain the reasons for the apparent duplication of effort. This is particularly important with non-military witnesses. The explanation should cover:

a. The different objectives of the two investigations;

b. The reasons why procedures vary;

c. The lack of promises of confidentiality in a JAGMAN Investigation; and

d. The fact that while both investigations are tasked to determine the cause(s) of a mishap and make recommendations regarding actions that might prevent a recurrence, a JAGMAN investigation also determines liability and can be used to hold people accountable for their actions or inaction.

Privacy Act: All witnesses should be provided copies of Privacy Act advisements for their review and signature prior to interview. This advisement is required due to the collection of personally identifiable information that will be recorded and maintained by the Navy.

Article 31(b) Rights: Unlike a Safety Investigation, the JAGMAN investigation may be the basis for future disciplinary and/or administrative action to be taken against individuals involved. As a result of this potential, ***the witnesses who may be subject to future action must be apprised of their 31(b) rights.*** 31(b) rights inform the witness that they are suspected of violating the Uniform Code of Military Justice (UCMJ) and that they have particular rights during questioning, e.g. the right to remain silent, to talk to an attorney, etc. Work with your assigned Judge Advocate for advice on potential charges and sample 31(b) rights advisements or contact the nearest Region Legal Service Office. **This is CRITICAL.**

Interviewing Techniques

An interview elicits information **from** a witness. Do not educate or inform the witness. Doing so shapes his/her account. Avoid basing your analysis or conclusions on a single interview. The IO may assist a witness to prepare his or her statement to avoid irrelevant material or omission of important facts. When an IO takes an oral statement, it should be reduced to writing, reviewed for accuracy and signed by the witness. Another option is to record the statement (with the witnesses' permission). In any event, care

should be taken to ensure that any statement is phrased in the actual language of the witness.

1. **Whom to Interview:** Anyone who might shed light on any aspect of the mishap, including people, equipment involved and events leading up to the mishap.

2. **When to Interview:** As soon as possible after the mishap. On the first day, identify witnesses, make contact and request a written statement from each one. You can return for an interview at a later time but you should do something immediately to preserve the unique details each witness might posses - a written statement helps to do that. High-value witnesses (crew, eyewitness) should be interviewed at the earliest opportunity.

3. **Where to Interview:** The best location is where the witness was at the time of the mishap. For example, an eyewitness is best interviewed at the spot where he/she viewed the mishap. If that is not feasible, then use a quiet, private place, where distraction will be minimal.

4. **Style of Interview:** Consider your style and manner for conducting interviews. There are many different ways to approach an interview and the best course is to do what is comfortable for you. Here are some thoughts on conducting the interview.

a. It may be helpful to establish a routine to make interviews as efficient and effective as possible. For example:
   - Start with a brief introduction of who you are, what you are doing, and why.
   - Explain the differences between a JAGMAN investigation and other types of investigations.
   - After the pleasantries, ask permission to record the interview.
   - When you begin recording, state your name, the time, location and who is being interviewed. Then briefly go over privacy act rights and/or 31(b) rights, were applicable. Have the witness agree on the record to being interviewed with recording.
   - Conduct the interview.
   - When finished, thank the individual for their time and let them know how to get in touch with you should they have anything further to add.
   - After the witness has departed, take a moment highlight any items of interest for future reference.

b. Begin the interview with an open-ended question and take notes throughout. Let the witness talk through everything first. Start with a wide open question similar to “start wherever you would like, and tell me what happened” or “what did you see?”

c. Taking notes and jotting follow-up questions while the witness tells his/her story lets the witness highlight what they thought was the most useful. After they are through, then you can ask your follow-up questions.

d. Consider ending with “is there anything else you think I should know?” which is effective in bringing information that may not have been asked about or considered.

e. Ensure you allow enough time to conduct the interview without interruption. If the interview is taking more than an hour or so, consider taking a break.

f. Witnesses should be interviewed individually. Try to avoid opportunities for them to confer (waiting room scenario).

g. Take a moment to theorize what information each witness can provide and then prioritize witnesses according to their likely value and schedule accordingly.

h. Follow-on interviews with select witnesses might be needed. Be sure to advise the witnesses of potential follow-up interviews and THANK them for their cooperation.

VII. Engineering Support

In general, engineering support is typically provided by the Naval Aviation Systems Command (NAVAIR) through the Fleet Support Teams (FST) and/or other NAVAIR entities. If they can not provide what you need, it may be necessary to reach out to the manufacturer. However, even if that is required, it will be done in consultation with the NAVAIR FST for the airframe in question. **Coordinate with the AMB on engineering support** as they will likely have already engaged subject matter experts (SME) from NAVAIR to support their investigation.

As discussed in Section IV of this document, the resulting Engineering Investigation (EI) report produced is not privileged and available to you, as well as the AMB. The one exception would be the reconstruction animation if it incorporates AMB hypotheses or speculation. That capability is available to you, just not the AMB specific product.

In addition to specific airframe support from the FST, there are three other specific NAVAIR mishap support capabilities worth mentioning here – MIST, NAVAIR 4.3.2 Aeromechanics Division and PMA 209 Air Combat Electronics.

Mishap Investigation Support Team (MIST) - Aviation Life Support Systems (ALSS) Investigation Assistance

MIST, formed under NAVAIR 4.6 Human systems / PMA 202, is a systematic approach to examining ALSS in aircraft mishaps. ALSS investigation is complex because it involves interfaces between personal flight equipment, life support systems, escape systems and survival equipment. This includes such equipment as ejection and crashworthy seats, parachutes, breathing apparatus, night vision devices and personal flight equipment. Each of those systems is a separate technical area, supported by engineering and technical personal at scattered locations. A mishap investigation usually requires attendance by several engineers and technicians as a committee to consider the combined systems.

Led by an onsite coordinator, the team will provide factual data to the concurrent investigations (AMB, JAGMAN, and NCIS) concerning the operation of the total egress system including factors that might have contributed to injury or fatality of aircrew. The MIST will provide a human factors engineering (HFE) evaluation and report of the ALSS.

MIST involvement in a mishap investigation is recommended if the aircrew experienced problems with ALSS resulting in serious injury or fatality. The Naval Safety Center Investigator detailed to an investigation will contact the MIST coordinator for assistance, as required. If a NSC investigator does not attend and MIST assistance is needed, contact the Naval Safety Center or MIST Coordinator at the numbers listed below.

Naval Safety Center, Aviation Mishap Investigations (Code 13):
(757) 444-3520 ext 7813 or (DSN) 564-3520 ext 7813

MIST Coordinator:
(760) 939-6132 or (DSN) 437-6132

NAVAIR 4.3.2 – Aeromechanics Division

NAVAIR 4.3.2 – Aeromechanics Division provides subject matter experts in the areas of flight dynamics, flight controls, aircraft performance, aerodynamics, air vehicle modeling and simulation. They can provide exceptional support when the mishap involves events such as out of control flight, midair collision, controlled flight into terrain, flight control failures or other flight dynamics related accidents. AIR 4.3.2 has developed an analytical toolset in which data from various onboard systems (i.e. crash survivable data recorders, mission computers, HUD video, etc) as well as off board data (i.e. RADAR tracking, video / pictures, etc) can be merged into a consistent chronological time sequence. This time relative database enables flight path trajectory reconstruction and visualization which greatly aids in understanding the events surrounding the mishap. In the event that no data was recovered from the mishap aircraft, such that flight path reconstruction cannot be accomplished, then the in-house air vehicle simulation combined with hardware in-the-loop, where applicable, can be used to generate a flight path recreation based on known events which lead up to the mishap.

The products include:

a. Engineering Analysis and Supporting Data Report which is the written account of the results and discussion from the engineering analysis of the reconstruction efforts.
b. Mishap Reconstruction videos. These visualizations will be provided in a format (QuickTime, Windows Media Format, etc) which can be easily viewed.
c. Participation in piloted real-time simulation sessions as requested to fly specific mishap scenarios.

Contact the Naval Safety Center or the NAVAIR 4.3.2 Lead for assistance at:

Naval Safety Center, Aviation Mishap Investigations (Code 13):
(757) 444-3520 ext 7813 or (DSN) 564-3520 ext 7813

NAVAIR 4.3.2 Aeromechanics Division, Air vehicle Department
(301) 757-0842 or (DSN) 757-0842

NAVAIR PMA-209 – Air Combat Electronics

PMA209 champions the development, integration and cradle-to-grave support for common avionics solutions in safety, connectivity, mission computing and interoperability. Given that mission they can provide specific subject matter expertise on such systems as Ground Proximity Warning System (GPWS), Terrain Awareness Warning Systems (TAWS), Traffic Alert and Collision Avoidance System (TCAS), Mid-air Collision Avoidance System (MCAS), and the Structural Data Recording Set

(SDRS). Additionally, their Common Flight Information Recorder Analysis Lab (CFIRAL) has limited capability to perform data download from various flight data recorders, even if damaged during the mishap.

Contact the Naval Safety Center or Fleet Aviation System Support Team (FASST) lead for assistance at:

Naval Safety Center, Aviation Mishap Investigations (Code 13):
(757) 444-3520 ext 7813 or (DSN) 564-3520 ext 7813

FASST Lead
(301) 757-0904 or (DSN) 757-0904

VIII. SALVAGE

This section outlines the rationale for salvage and the elements of information others need to respond to a salvage request. "Salvage" is the retrieval of submerged wreckage. "Search" refers to finding wreckage. There must be a successful search before salvage can be attempted. Most operations require task-organization. Mixed operations of Navy and commercial assets are common.

Is Salvage Appropriate?

Affirmative answers to any of the following four questions will satisfy the basis for justifying a salvage operation as stated in ALNAV 020/98 (SECNAV 161750Z MAR 98: DON Salvage Policy):

a. Is the wreckage necessary to determine cause?

b. Is the wreckage a hazard to navigation?

c. Is an item of national security interest at risk?

d. Is there an environmental concern?

Reasonable effort will be made to recover crew/passenger remains incidental to salvage, but the primary basis for salvage is not recovery of remains. "DON recognizes that the sea has always been considered a fit and final resting place for Navy and Marine Corps personnel." (SECNAV message 16 Mar, 1998).

In the context of the mishap investigation, the primary purpose is to determine the cause of the mishap in order to prevent reoccurrences. OPNAVINST 3750.6 instructs an AMB to evaluate its need for evidence. In instances where, despite the absence of wreckage, enough is known from other evidence to form a conclusion as to the cause(s), an AMB may forego salvage. This guidance is applicable to the JAGMAN investigation as well. Coordination with the AMB will ensure the needs for both investigations are met.

If the controlling custodian of the mishap aircraft desires to salvage the wreckage but lacks assets capable of accomplishing the recovery the salvage request will be forwarded to the fleet commander. The fleet commander will consult the appropriate type commander to determine if the mission can be done; how to go about it; and whether organic assets are available. When fleet assets are insufficient, but the salvage is supported, the fleet commander may forward the request to CNO. CNO can task NAVSEASYSCOM (00C/Supervisor of Salvage and Diving). SUPSALV will deploy assets on Navy or merchant vessels or contract commercial assets to support the tasking. SUPSALV will oversee any salvage in which it has involvement.

If salvage is approved, refer to the Senior Member's Guide Safety Center web-site for further discussion of coordination, AMB participation and wreckage delivery.

IX. Working with the FAA

If a mishap aircraft was under direct Air Traffic Control (ATC) when the mishap occurred, you should consider the air traffic controller as a member of the aircrew; and therefore, a witness with first hand information. You'll want an interview or statement from that controller. The involved ATC facility can further provide radar and aural tapes, their own set of standard operating procedures, and the like. This material may all be useful to your investigation, but the logistics of obtaining it can be cumbersome. Assistance in obtaining such evidence can be provided by the mishap unit's type commander (TYCOM), Naval Representative (NAVREP) assigned to FAA regional headquarters offices, and Naval Safety Center investigators.

To obtain FAA radar tapes from non-DOD facilities, or to arrange interviews with FAA ATC personnel, contact the NAVREP at the appropriate regional headquarters.

Navy / Marine FAA Headquarters Liaison Officers

Navy: (202) 267-9421
Marine: (202) 267-8439
DSN: 325-6271/6273
Fax: (202) 267-5868

FAA National Headquarters
800 Independence Ave. SW
Washington, DC 20591

Eastern Service Area

Navy: (404) 305-6906
Marine: (404) 305-6907
Sr. ACC: (404) 305-6905
DSN: 797-5481/82
Fax: (404) 305-6990

Dept of the Navy Representative
FAA Eastern Service Area
1701 Columbia Avenue
College Park, GA 30337

Central Service Area

Navy: (817) 222-5930/31
Sr. ACC: (817) 222-2930
DSN: 477-2930
Fax: (817) 222-5993

Dept of the Navy Representative
FAA Central Service Area
2601 Meacham Blvd
Fort Worth, TX 76137

Western Service Area

Navy: (425) 227-2740
Marine: (425) 227-1384
Sr. ACC: (425) 227-2665

Dept of the Navy Representative
FAA Western Service Area
1601 Lind Avenue Southwest
Renton, WA 98057